

An introduction to “Stories from the Clean Room”

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1 May 2018

Introduction

Electronics such as mobile phones, computers and TVs are blockbuster consumer products but their manufacture relies on and uses more than a thousand chemicals and other materials.¹ Many of these are hazardous and lack comprehensive health and safety information due to weak regulatory policies. This causes harm in production, exposes consumers to toxic chemicals during use, and releases toxic chemicals when products become electronic waste. As the global hub for electronics production shifted from the US to Asia, the industry also outsourced toxic chemical use as production soared.² By the mid-1970s, there were about one million workers in electronics assembly in Asia and 90% of them were women.³

The human face of electronics industry harm in South Korea

Supporters for the Health and Rights of People in the Semiconductor Industry (SHARPS)⁴ is an IPEN Participating Organization and a leading Korean NGO advocating for worker safety in the electronics industry. The harms to human health from electronics manufacturing were not widely known in South Korea until the SHARPS began its work in 2007.

The unfortunate death of Hwang Yumi triggered the formation of SHARPS and set the stage for revealing a startling series of illnesses linked to work in the electronics industry. Samsung recruited Hwang Yumi in high school as part of a hiring strategy that focused on young women for work in the chemically intensive semiconductor industry. She entered Samsung Semiconductor in 2003 at age 18 and was diagnosed with leukemia in 2005. During her struggle with the disease, Hwang Yumi learned that her coworker had also contracted leukemia and died. Her father, sensing something was wrong, asked for help to discover the cause of the illness and to get compensation. The company rejected his efforts and news media showed little interest in reporting on a problem with a powerful company that represented 20% of the country’s GDP and large amounts of advertising revenue. In 2007, Hwang Yumi died in the back seat of her father’s taxi on her way back to her childhood home. Acting on a promise to his daughter, her father took a break from working as a taxi driver and pushed for action. This led to the formation of SHARPS in November 2007 as a network of advocates for worker safety, including trade unions, human

rights groups and public health professionals to address harms to human health in the Korean electronics industry.



Hwang Yumi and Hwang Sang-gi in 2007. Photo: SHARPS

Since 2007, SHARPS has collected more than 300 cases of occupational diseases mainly related to chemical exposures in the electronics industry. The normal practice of Samsung in South Korea is to routinely hide information on chemicals to conceal links between worker diseases and the company’s working environment and to prevent its sick workers from

receiving government compensation.⁵ Samsung’s refusal to address its working conditions has resulted in hundreds of illnesses in South Korean workers in the last 10 years. Recent Korean Court decisions have overturned the company’s “trade secrets” strategy in favor of workers.

SHARPS has organized claims for worker’s compensation to the government and achieved more than ten cases of legal recognition as occupational diseases, mostly as precedent-setting decisions. This includes leukemia⁶ (MagnaChip Semiconductor, Samsung Semiconductor); malignant lymphoma⁷ (Hynix Semiconductor, Samsung Semiconductor); brain tumor⁸ (Samsung semiconductor); multiple sclerosis⁹ (Samsung LCD); infertility¹⁰ (Samsung Semiconductor); and ovarian cancer¹¹ (Samsung Semiconductor).



Peer reviewed scientific publications have also linked diseases to the industry. An analysis of epidemiological data found evidence suggesting reproductive risks to women from semiconductor fabrication jobs including spontaneous abortion, congenital malformation, and reduced fertility.¹² A subsequent examination of reproductive risks among female microelectronics workers aged 20 – 39 years old found a significantly higher risk for spontaneous abortion and menstrual aberration.¹³ A study of leukemia and non-Hodgkin lymphoma (NHL) cases from the Giheung Samsung plant reported to SHARPs, found 17 sick workers with 11 of them women – all 30 years old or younger.¹⁴ As Baskut Tuncak, UN Special Rapporteur on Toxics, noted in his official report after visiting South Korea, “*All former workers described to the Special Rapporteur are young females, including several in their early twenties. With many female workers of childbearing age, the alleged victims extend to the children of former workers. For example, the Special Rapporteur heard from a mother who had been pregnant during her employment and subsequently given birth to a child with birth defects.*”¹⁵

SHARPS decided to develop a visual record of the electronics industry victims by making a film featuring voices of former workers and their families. Since many of them migrated to the Samsung factory cities, the project involved a large effort to track down and visit sites all over the country to interview former workers and families about how they entered the industry, what their jobs actually were, how they got sick, and unfortunately for some, how their spouses or children died. The 45-minute film, “Stories from the Clean Room” weaves together the testimonies of 23 people whose lives have been impacted by the electronics industry.¹⁶



Cha Ju-seouk
Mother of late Park Hyo-soon
Samsung Semiconductor
Lymphoma
Died at age 28



Han Hye-gyeong
Samsung LCD
Brain tumor
Sick at age 27



Kim Bo-mi
Samsung LCD
Chronic renal failure
Sick at age 21



Shin Hyo-soon
Samsung Semiconductor
Brain tumor
Sick at age 28



Kim Mi-yeon
Samsung Semiconductor
Choriocarcinoma
Sick at age 34



Lee Ji-yeong
Samsung Semiconductor
Brain tumor
Sick at age 30

In June 2017, the film stunned lawmakers as it premiered at South Korea's national parliament. A brief trailer for the film is located here: <https://drive.google.com/open?id=129Tkjj6gRPIOk-8ljNcTjP1ge3mP8krC>. The film has Korean audio and versions with subtitles in Arabic, Chinese (both traditional and simplified characters), English, French, Korean, Russian, Spanish, and Vietnamese. Global showings are planned in more than 20 countries in 2018 and beyond.

References

- ¹ American Public Health Association (2012) Improving occupational and environmental health in the global electronics industry, Policy statement 20124, <http://apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/21/08/43/improving-occupational-and-environmental-health-in-the-global-electronics-industry>
- ² <https://www.bloomberg.com/news/features/2017-06-15/american-chipmakers-had-a-toxic-problem-so-they-outsourced-it?smd=157392532>
- ³ Lim LY (1981) In: Dauber R, Cain ML, eds. Women and technological change in developing countries. Boulder, Colorado, Westview Press, 1981. 181-90. (AAAS Selected Symposium 53) <http://www.popline.org/node/385070>
- ⁴ <https://stopsamsung.wordpress.com/about-sharps/>
- ⁵ <https://apnews.com/0fa26d4e3a5140239553274fddd9b983/2-words-keep-sick-samsung-workers-data-trade-secrets>
- ⁶ https://www.upi.com/Top_News/World-News/2014/08/21/Samsung-caused-employees-leukemia-S-Korean-court-says/7081408641967/
- ⁷ <http://cancerhazards.org/?p=1709#sthash.4fNa3yD0.b39zZpxj.dpbs>
- ⁸ <https://www.cbsnews.com/news/samsung-south-korea-lee-yoon-jung-wins-compensation-brain-tumor/>
- ⁹ <https://www.theglobeandmail.com/report-on-business/international-business/asian-pacific-business/court-rules-former-samsung-workers-multiple-sclerosis-linked-to-factory/article36124280/>
- ¹⁰ http://english.hani.co.kr/arti/english_edition/e_business/787230.html
- ¹¹ http://www.hani.co.kr/arti/society/society_general/801930.html
- ¹² Kim MH, Kim H, Paek D (2014) The health impacts of semiconductor production: an epidemiologic review, *Int J Occup Environ Health* 20:94-114
- ¹³ Kim I, Kim MH, Lim S (2015) Reproductive Hazards Still Persist in the Microelectronics Industry: Increased Risk of Spontaneous Abortion and Menstrual Aberration among Female Workers in the Microelectronics Industry in South Korea, *PLoS One* doi: 10.1371/journal.pone.0123679
- ¹⁴ Kim I, Kim HJ, Lim SY, Kong JO Leukemia and non-Hodgkin lymphoma in semiconductor industry workers in Korea (2012) *Int J Occup Environ Health* 18:147-153
- ¹⁵ Tuncak, B (2016) Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on its mission to the Republic of Korea, Human Rights Council, Thirty-Third Session, A/HRC/33/41/Add.1
- ¹⁶ <http://ipen.org/news/stories-clean-room>